Dongguan Togran Electronics Technology Co.,LTD

File Name：TK402G 2.4G wireless Keyboard Spec

Department：R&D

Edit：Linli/Fuzhou Wei

Check： ZhongMin Wang

Approval：Zhengliang You

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Revision History				
Date	version	page	Revised	Description

			page	
2024-6-4	A0			Start of the document, first release

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R&D	2024-6-4	Linli/Fuzhou Wei	ZhongMin Wang	Zhengliang. You	DCC	Sales/PE

1   Introduction

This document contains a functional and performance specification of the Wireless USB slim Keyboard. Compatible with Win XP, Win Vista, Win7, Win8, Win8.1, Win10, Win11 and other operating systems.

Transmitter:
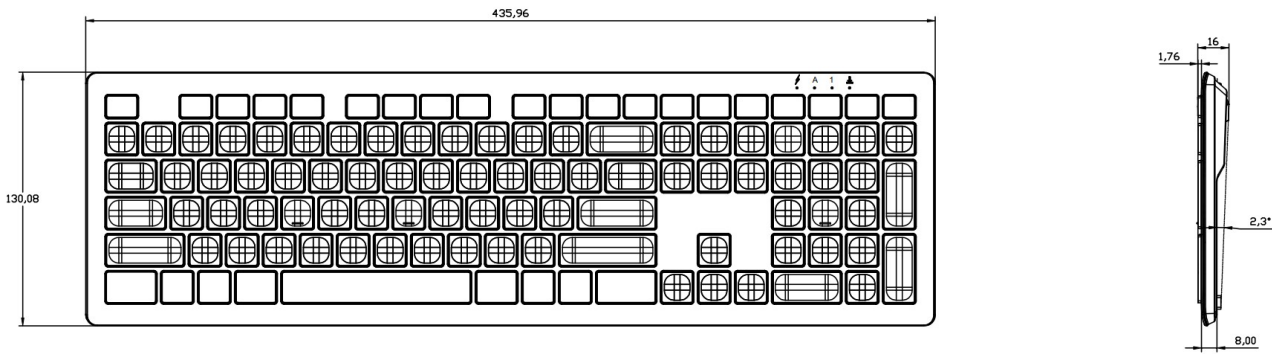
Receiver:
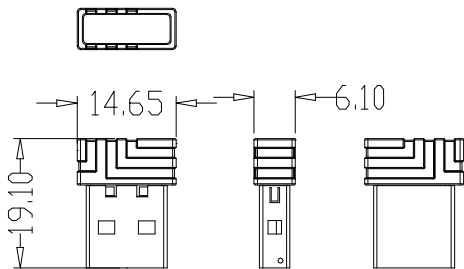
2   Physical Specification

- Dimension

  Transmitter：

  Height: 16±0.5mm
  Length: 436±0.5mm
  Width: 130±0.5mm

  Receiver：

  Height: 6.0±0.5mm
  Length: 19.0±0.5mm
  Width: 15.0±0.5mm

- Weight: approx.   380± 20g.

3   Mechanical Characteristics

3.1   Keyboard color

- Top case   togran black
- Bottom case   togran black
- Kepcap1#   togran black

- Kepcap2#   togran gray
- LED lens   transparency clear
- Legend printing   Pantone white/305C for Fn+ key
- LED indicator icon   Pantone 403C

3.2   Key switch

- Operating force of   Keys: 65±15   gf
- Tolal travel   1.5±0.3 mm
- Click ratio   >40%
- Bounce   5ms

3.3   Keyboard material

- Top case   ABS or HIPS
- Bottom case   ABS or HIPS
- Kepcap1#   ABS
- Kepcap2#   ABS
- LED lens   transparency PC
- Mid-board   transparency PC
- Scissors   POM
- Rubber dome   Silicone
- Foot (turn)   ABS+TPE
- Foot   Silicone

4   Radio   Characteristics:

4.1   Transmitter

- Li Battery: 502035 3.7V 350mAh   38*20*5mm
- Frequency：2.405~2.470 GHz.
- Working channel:16 channel
- Power consume: Key working <10mA ； （Suspend I）<0.1mA；（Suspend II）<0.02mA
- Working distance: ＜10Metre

4.2   Receiver

- System interface: USB port of PC.
- Supply voltage: 4.75V±10%
- Working Power consumption: 30 mA (Max)
- Frequency：2.405~2.470GHz.
- Working channel : 16 channel

5   Important Components

- Receiver :   IC: TLSR8373A
  Transmitter :IC: TLSR8373C

6   Environment

6.1   Operating Temperature and Humidity

Temperature: 0°C to 40°C

Humidity: 85% RH or less

6.2   Storage Temperature and Humidity

Temperature: -15 $^{\circ}$C to 60°C

Humidity: 85% RH or less

7   Reliability Specifications

7.1   Key Life Test

Switching speed: 3 cycles/sec.

Operating force of   Key: 100 $\pm$20gf.

Operating cycles: 5,000,000 cycles

Judging Criteria   : No functional defect should be found for the switch actuation.

7.2   High Temperature Test

Temperature: $60\pm2^{\circ}$C

Storage time: 96 hours.

After this test the mouse shall be left in room temperature for 1 hour.

Judging Criteria   : No functional defect should be found.

7.3   Low Temperature Test

Temperature: $-15\pm2^{\circ}$C

Storage time: 96 hours

After this test the mouse shall be left in room temperature for 1 hour.

Judging Criteria   : No functional defect should be found.

7.4   Moisture Test

Temperature: $40\pm2^{\circ}$C

Humidity: 90~95% R.H.

Storage time: 96 hours.

After this test the mouse shall be left in room temperature for 1 hour.

Judging Criteria   : No functional defect should be found.

7.5   Heat Cycle Test

Temperature: $-15\pm2^{\circ}$C for 1 hour and then $60\pm2^{\circ}$C for 1 hour

Storage time: 5 cycles.

After this test the mouse shall be left in room temperature for 1 hour.

Judging Criteria   : No functional defect should be found.

8   Agency Certifications

FCC CLASS B PART15

CE

10 Application Matrix.

	R0 P20	R1 P21	R2 P22	R3 P23	R4 P24	R5 P25	R6 P26	R7 P27
C0 P15	Z	1(!)	POWER	Prev Track	Alt-R	Next Track	Sleep	WAKE UP
C1 P35	C	3(#)	€	Volume+	Volume-	WWW refresh	Ctrl-R	WWW favorite
C2 P36	V	5%	F5	WWW back	Alt-L	WWW Forward	WWW STOP	WWW search
C3 P37	ENTER	6^	F6			Shift-L	￥	G
C4 P00	F	F3	PAUSE	M			Ctrl-L	MAIL
C5 P01	K56	4($)	SPACE	Win-L	WWW Home	131	132	133
C6 P02	K14	F4	A	Calculator		K150	K151	**WIN_R**
C7 P03	F7	`(~)	S	Y	P	7(&)	B	
C8 P11	F8	-_	Tab	U	[{	8*	H	N
C9 P14	F9	=+	D	I	]}	9(	″″	FN
C10 P12	F11	F1	W	PRINT	HOME	DEL	Insert	.(>)
C11 P10	F12	L	E	SCROLL LOCK	END	Page Up	Page Down	/?
C12 P13	F10	F2	Q	O	|	0())	K42	,(<)
C13 P07	APP	;:	↑	NUM LOCK	7(K)	4(K)	1(K)	K45
C14 P06	ESC	K	←	/(K)	8(K)	5(K)	2(K)	0(K)
C15 P05	R	J	↓	*(K)	9(K)	6(K)	3(K)	.(K)
C16 P04	T	Back Spack	→	_(K)	+(K)	K107	Enter(K)	CAPS LOCK
C17 P16	X	2(@)	MyPC	Play/ Pause	Media	Shift-R	Media Mute	Media Stop

11 Functional Specification.
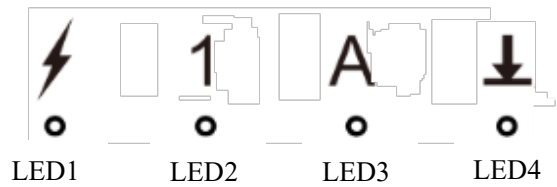
1. LED Indicator:

Item	Indicator	Color	Definition
LED1	**Charging**	Red	Red always on when charging.
		Green	Green always on when fully charged.
LED2	**Num lock**	Green	Green indicator is on.
LED3	**Caps lock**	Green	Green indicator is on.
LED4	**Scroll lock**	Green	Green indicator is on.
	2.4G	Flash red	When the 2.4G is pairing, the indicator flashes red quickly. After pairing successfully. The light goes out.
	LVD	Flash red	The indicator flashes red slowly when the battery is low.

2. Multimedia function

Item	Multimedia	Windows	Mac OS		
1	Fn+F1	Brightness-	Brightness-		
2	Fn+F2	Brightness+	Brightness+		
3	Fn+F3	Browser home page	All active tasks		
4	Fn+F4	Search	Search		
5	Fn+F5	Music	NA		
6	Fn+F6	Previous	Previous		
7	Fn+F7	Play/Pause	Play/Pause		
8	Fn+F8	Next	Next		
9	Fn+F9	Mute	Mute		

10	Fn+F10	Vol-	Vol-		
11	Fn+F11	Vol+	Vol+		
12	Fn+F12	Email	NA		
13	🖩	Calculator	NA		
14	☆	Bookmarks	NA		
15	🔒	Screen Lock	Screen Lock		
16	↩	Undo	Undo		
17	Fn+W	Change to Windows			
18	Fn+E	Change to MAC OS			
19	Fn+Esc	Fn Lock			

2.4G forcible pairing instructions

Press FN+2.4G and hold FN+2.4G for more than 3 seconds to enter the pairing state, and the red LED flashes quickly(the pairing time is 20 seconds), then insert USB Dongle within 20 seconds , move the keyboard closely to the Dongle. LED will be on for 2 seconds and then turn off while 2.4G pairing is successful.

FCC Warning

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:
(1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

NOTE 1: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
-Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
-Consult the dealer or an experienced radio/TV technician for help.

NOTE 2: Any changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

The device has been evaluated to meet general RF exposure requirement. The device can be used in portable exposure condition without restriction.